Productivity Commission Inquiry into the National Education Evidence Base

Early Start, University of Wollongong – Response to Issues Paper

May 2016

Preamble

Early Start would like to acknowledge the Productivity Commission's efforts in gaining a clear grasp of the main issues in delivering comprehensive and consistent data to underpin a national evidence base able to inform education policy and help improve educational outcomes for children.

In response to the Issues Paper, Early Start has detailed a number of key messages which we see as critically important for the Inquiry to consider in further developing the national evidence base for school and early childhood education.

Early Start Key Message 1: The scope of the evidence base should include children younger than 4 years and cover all children, not only those accessing early childhood education and care (ECEC).

International research shows that what happens to children aged four years and younger is important and has a long-term impact on education and developmental outcomes. The Abecedarian Project in North Carolina which involved low-SES African-American communities highlights this point (Campbell & Ramey 1994; Ramey & Campbell, 1991; Ramey et al., 2000). In this project, one group was allocated to a program involving centre-based care and home visits from three months of age and continuing until the children entered school (the Abecedarian approach). The control group received essentially what would be defined as "best-practice" for this age group: family support, social services, low cost or free paediatric care, and child supplements but no additional childcare beyond what the parents and the local services provided. By age 21 the children who participated in the Abecedarian approach showed, in comparison with their control groups peers, greater gains in cognitive functioning academic skills, and educational attainment. They also had higher levels of employment, better parenting skills and were more socially adjusted. The authors also found that the earlier the children started, the greater the effect.

While the evidence above deals with disadvantaged groups, there are also consequences for ECEC for the total population. For example in the UK, the effective Pre-school, Primary and Secondary Education (EPPSE) project demonstrated the long-term effects of ECEC for children from age 2 upwards (Melhuish et al. 2008; Sammons et al.2008; Sammons, Sylva et al., 2014a, 2014b, 2014c; Sammons et al., 2014; Sammons et al., 2011; Sylva et al., 2011) and earlier and more recent work (Melhuish, et al., 1990; Barnes & Melhuish, 2016) also show effects of ECEC at 2 years and below upon later development. Similar effects are reported in other countries (see Melhuish et al., 2015). Hence it is clear, both for disadvantaged and non-disadvantaged populations, that the pattern of ECEC experience below 4 years of age has consequences for later development.

Early Start, University of Wollongong, Response to Issues Paper - Productivity Commission Inquiry into National Education Evidence Base

Page **1** of 8

Professor Edward Melhuish from Early Start recently reviewed the international evidence on the effects of ECEC on child development (Melhuish et al 2015). This review highlighted the importance of collecting data on disadvantaged children aged four years and younger with the review noting that international 'evidence on childcare in the first three years for disadvantaged children indicates that high-quality ECEC can project benefits for cognitive, language and social development' and that 'high-quality childcare with associated home visits may produce the greatest benefit for children less than three years old'.

While international evidence for children younger than 4 years of age (together with pre-natal data) may be used as a proxy for Australia, there is no certainty that this evidence is automatically applicable in the Australian context. Early Start considers the most appropriate pathway to supporting policy and investment decisions is investing in the collection and linkage of Australian evidence that covers all children, including those younger than 4 and those not accessing early childhood education and care, which is more likely to be those children from vulnerable backgrounds and disadvantaged communities.

Early Start Key Message 2: A broad definition of outcomes is necessary including non-academic outcomes such as health and wellbeing and other early childhood development indicators.

We agree that the objective of a National Education Evidence Base should be primarily to improve educational outcomes. However, we also suggest that this Inquiry provides a unique opportunity to build the evidence base for other important developmental outcomes that may be related to educational outcomes and that may become critical in the future as new evidence emerges.

Some of these would be important child outcomes in areas such as cognitive development, social and emotional development, and physical development. In addition, a broad definition of the quality of the ECEC environment is important to consider along with educator outcomes (such as the quality of their interactions with a child).

Examples of specific child outcomes in each of the above developmental areas would include:
- Cognitive development: executive function and language and numeracy skills
- Social and emotional development: self-regulation and communication
- Physical development: weight status, physical activity, eating behaviours, gross and fine motor skills.

Increasingly research is pointing to children's self-regulation as key to their success in education (Bodrova & Leong, 2012). Differences in self-regulation have consequences for longer-term outcomes both in the socio-emotional domain and the cognitive domain, including educational outcomes. By the end of the pre-school years, well regulated children can wait their turn, resist the temptation to grab a desired object from another child, tidy up after play with little prompting, help another child or adult with a task and persist with a challenging activity. Self-regulation skills in this age group are better predictors of school readiness than IQ or entry-level literacy or numeracy skills (Blair & Razza, 2007).

Data we have recently collected on nearly a thousand 3-5 year-old children from 35 ECEC centres that are part of our Early Start Engagement Network (all in disadvantaged communities, 35% of children who identify as Aboriginal, and around 50% who live in rural or

Early Start, University of Wollongong, Response to Issues Paper - Productivity Commission Inquiry into National Education Evidence Base

Page **2** of **8**

remote locations) showed that a significant proportion of children did not reach the level of development typical for their age for non-educational outcomes like self-regulation, language development and fine motor skills.

Early Start Key Message 3: Longitudinal data are essential

Longitudinal data are considered essential to readily and reliably differentiate long-term life outcomes from short-term impacts of early interventions, government policies, family circumstances and other events. These longitudinal data sets should complement experimental and quasi-experimental data to provide more comprehensive data to underpin a national education evidence base to inform education policy and help improve educational outcomes for children.

International research has highlighted the importance of longitudinal studies with some initiatives showing clear fade-out effects with improvements in outcomes lasting only until the first year of school while other initiatives have delivered long-term benefits which carry over to later life.

For example, a cross-sectional study in Quebec (Pingault et al., 2015) showed differences at school entry (age 6) for children who received non-parental child care in the preschool years. Specifically, these children were less shy, less socially withdrawn, more oppositional and more aggressive at school entry. However, when these children were subsequently followed up during elementary schools, these differences had disappeared with children receiving exclusively parental care catching up with those who received preschool group care.

The Effective Preschool, Primary and Secondary Education study in England showed that the quality of the preschool environment predicted child outcomes consistently over time, with continuing effects on academic attainment up to the age of 16 (Anders et al., 2011; Melhuish et al. 2008; Sammons et al.2008; Sammons, Sylva et al., 2014a, 2014b, 2014c; Sammons et al., 2014; Sammons et al., 2011; Sylva et al., 2011).

Longitudinal data facilitates the identification of fade-out effects and supports assessment of the full educational and societal impacts and return on investment of policy change or investment decisions. As such, we see longitudinal data as critical to informing future education policy and improving child outcomes.

Early Start Key Message 4: Real time data are required

There are great benefits to be had in increasing the opportunities for real-time data collection in ECEC settings. In our experience, collecting data and then feeding it back to ECEC centres in "real-time" (that is, so that decisions made by centres in response to the data provided can have an immediate impact on the children, educators, and centres from whom it were collected) is empowering to educators. A critical component of this approach is to ensure that follow-up data are collected so that ECEC centres have the opportunity to see the impact of decisions that have been made (again such data should be fed back in consultation with the centres). In one of our current projects, we are working with 43 ECEC centres in disadvantaged regional, rural, and remote communities as part of a group randomised controlled trial examining the effect of training educators to improve the quality of the physical activity and gross motor skills environment in their centre. Twenty-two ECEC centres were randomised to the intervention group (21 to control group), and were fed back

Early Start, University of Wollongong, Response to Issues Paper - Productivity Commission Inquiry into National Education Evidence Base

Page **3** of **8**

data on the level of implementation of the intervention program approximately 6 months after starting the program (Time 1). These data were used by staff to set specific goals around improving implementation over the coming 6 months. We then collected follow-up data on the level of implementation of the program (Time 2). We categorised each centre as low, medium or high based on their level of implementation. These data are presented in Table 1. Of the 19 centres where we have data at Time 1 and Time 2, there was a clear improvement in the number of centres that were ranked as high and a concomitant decrease in the number of centres that were ranked low.

Level of implementation of programme	Number of Centres in each level of implementation	
	Time 1	Time 2
High	5	9
Medium	9	9
Low	5	1

Other opportunities to use real-time data collection would include educators collecting data on children's language development, self-regulation, fine motor skills, and gross motor skills. We believe it is possible to train educators in how to do this and, importantly, how to respond to the data once it has been analysed to best suit the needs of the ECEC centre and to bring about change.

There is a clear place for technology to support this. For example, the use of iPads (or equivalent devices) to collect the data that negates the need for separate data entry and can be programmed to provide immediate analysis of data and presentation of results to educators (and parents) at the individual and group level, as well as sending data to remote servers.

Early Start Key Message 5: The level of access to technology in rural and remote communities needs to be taken into account

Information Communication Technology (ICT) is a potentially powerful tool for extending educational opportunities for children located in regional, rural and remote areas. However a number of challenges face both the education sector and wider community and require planning, policy development and a strategic approach to moving forward for regional communities (Rural and Remote Education Advisory Council, 2010). Access is a multifaceted concept that with regards to ICT encapsulates a number of factors. However, on a basic level, technology access can be defined as the ability to gain reliable physical access to ICT resources at reasonable levels. As technology develops and changes, the number of barriers to technology access can increase and change, and this must be reflected in policies and strategies.

It is clear through previous research that the steady increase in individuals' reliance and use of computers has not been evenly distributed across individuals and communities (Ewing, 2016). Access to appropriate technology infrastructure remains problematic for rural and remote areas across Australia, with figures from the Australian Bureau of Statistics (2016) indicating a 20% variation between access in major cities and remote areas.

The goals for ICT integration will be different for different types of providers and effective implementation may look quite different in various educational settings. However, one of the key supports for effective integration, regardless of context, is connectivity. High-speed Internet, mobile technologies and supportive and adaptive software are all required to best

Early Start, University of Wollongong, Response to Issues Paper - Productivity Commission Inquiry into National Education Evidence Base

Page **4** of **8**

support integration. These elements, coupled with sufficient support channels, both in-house and external, must be present to facilitate appropriate technology use that adds real value and offers strong collaboration and connection between geographically dispersed areas.

The increasing availability and use of technology can have an extensive influence on the quality, timeliness and cost of data collection, processing and use. The collection and use of data for ECEC services is important in moving towards high-quality early childhood education and care.

Until recently, ICT has played a relatively small role in ECEC settings, with common practices and resources focused on the primary school environment. Despite rapid growth in society's use of digital technology, many children are still not able to access and use technology. This in turn means fewer opportunities to learn, explore and communicate digitally. Governments, both state and federal, have come to recognise the importance of early childhood education and have invested heavily in its provision. Positive directions established by the Federal Government with the Digital Education Revolution and Digital Regions initiatives have assisted in working towards closing the digital divide relating to regional, rural and remote schools (Trinidad & Broadley, 2010).

Innovation is needed to help communities grow, adapt and prosper, and in regional and remote areas this is even more important so that distance is no longer a barrier. International models such as the SuperNet in Alberta Canada and Connected North/TakingITglobal demonstrate the capabilities of technology in connecting urban to rural and regional areas in order to expand services and educational capabilities (Trinidad & Broadley, 2010). This can no longer only focus on the primary and secondary school environments.

Overall, eliminating the digital divide by ensuring basic technology resources are accessible in regional, rural and remote areas to develop early technology literacy should be considered as a first stage goal for future ICT integration into early childhood education. Recent research findings from Blackwell et.al (2014) and Robb and Lauricella (2014) play an important role in advancing our understanding of developmentally appropriate practice with ICT. As this research evidence grows, the challenge is to ensure ICT policies help bridge the digital divide learning gap, rather than accentuating it. Given both school and early childhood education sectors are governed by National Curriculum Frameworks, the Australian Government is in a position to deliver the information infrastructure needed to drive policy and practice improvement into the future. Governments are urged to consolidate and work together with community organisations and representatives to create a national digital data strategy that maximises benefits to all regional and remote communities.

Early Start Key Message 6: Build the capabilities of the early childhood education and care (ECEC) sector in data collection and use.

Early Start sees it as critical to build the capabilities of ECEC staff in data collection and use. Specifically, this would involve providing training or professional development for educators in how to collect, analyse, interpret and respond to their own collected data and how to understand and use data and evidence from the literature or other sources.

We believe that familiarising parents and educators with evidence collected by researchers on their own children or centre or as data collected collaboratively by educators and researchers is empowering. We also suggest providing scholarships for educators to

Early Start, University of Wollongong, Response to Issues Paper - Productivity Commission
Inquiry into National Education Evidence Base

Page **5** of **8**

undertake further training, education or study and professional development in the area of research and evaluation.

Early Start Key Message 7: Enhance research capacity including having government-funded centres for research in childhood education and development.

We believe it would be prudent for governments to invest in establishing and supporting dedicated research centres for research in early childhood education and development. It would raise the profile of early childhood research and reinforce to end-users the importance of research and evaluation. Such centres would also provide excellent training environments in applied research for PhD students and post-doctoral researchers. There are several examples of how Australian and overseas governments have supported such centres. Three of these are described below.

The Center on Enhancing Early Learning Outcomes (CEELO), based at the National Institute for Early Education Research was funded by the U.S. Department of Education. CEELO works in partnership with State Education Agencies, state and local early childhood leaders, and other federal and national providers to strengthen their capacity to lead sustained improvements in early learning opportunities and outcomes. Integral to CEELO's success is providing a comprehensive evidence base to inform policy development. This is achieved through improving states' knowledge about and use of early childhood comprehensive assessment systems and enhancing how those working with young children use assessment data and other information to improve program quality.

NSW Health funds the Physical Activity, Nutrition and Obesity Research Group at University of Sydney to conduct policy-relevant research to improve health outcomes in NSW. This includes conducting statewide monitoring surveys of school-aged children (SPANS), secondary analyses of large-scale data sets in NSW and other applied research to support the efforts in the NSW Health Department. The SPANS surveys have allowed the state to regularly monitor the prevalence of important health outcomes such as child and adolescent overweight and obesity.

The Frank Porter Graham Child Development Institute at University of North Carolina receives funding from the North Carolina state government to conduct research and evaluation in early childhood. Recently, it established the National Pre-K and Early Learning Evaluation Center that provides evaluation services for states and federally funded pre-k and early learning programs, assists with designing and implementing such programs, and with disseminating findings to policymakers and other stakeholder groups.

Early Start, University of Wollongong, Response to Issues Paper - Productivity Commission Inquiry into National Education Evidence Base

Page **6** of **8**

References

Anders, Y., Sammons, P., Taggart, B., Sylva, K., Melhuish, E., & Siraj-Blatchford, I. (2011). The influence of child, family, home factors and pre-school education on the identification of special educational needs at age 10. British Educational Research Journal, 37(3), 421-441. doi: 10.1080/01411921003725338

Australian Bureau of Statistics. (2016). *Household Use of Information Technology, Australia 2014-2015.* Retrieved from http://www.abs.gov.au/AUSSTATS/abs@.nsf/ProductsbyReleaseDate/ACC2D18CC958BC7BCA2568A9001393AE?OpenDocument

Barnes, J & Melhuish, E. (2016). Amount and timing of group-based childcare from birth and cognitive development at 51 months: A UK study. International Journal of Behavioral Development, DOI: 10.1177/0165025416635756

Blackwell C, Lauricella, A and Wartella, E (2014). Factors influencing digital technology use in early childhood education. Computers and Education, 77, 82-90. Retrieved from ScienceDirect.

Blair C, Razza R. P. (2007). Relating effortful control, executive function, and false belief understanding to emerging math and literacy ability in kindergarten. Child Development 2007; 78:647-663.

Bodrova, E., & Leong, D. J. (2012). Scaffolding self-regulated learning in young children: Lessons from tools of the mind. In Pianta, R. C., Barnett, W. S., Justice, L. M., & Sheridan, S. M. (Eds.).*Handbook of early childhood education.* (pp. 352-369). Guilford Press.

Campbell, F. A., & Ramey, C. T. (1994). Effects of early intervention on intellectual and academic achievement: a follow-up study of children from low-income families. Child Development, 65(2), 684-698.

Ewing S (2016, February 25). Australia's digital divide is narrowing, but getting deeper. Swinburne News, Retrieved Online: http://www.swinburne.edu.au/news/latest-news/2016/02/australias-digital-divide-is-narrowing-but-getting-deeper.php

Melhuish, E.C., Lloyd, E., Martin, S. and Mooney, A. (1990) Type of childcare at 18 months: II Relations with cognitive and language development. Journal of Child Psychology and Psychiatry, 31, 861-870.

Melhuish, E. C., Sylva, K., Sammons, P., Siraj-Blatchford, I., Taggart, B., Phan, M., & Malin, A. (2008). Preschool influences on mathematics achievement. Science, 321(5893), 1161-1162.

Melhuish, EC, Ereky-Stevens, K, Petrogiannis, K, Ariescu, A, Penderi, E, Rentzou, K, Tawell, A, Slot, P, Broekhuizen, M, Leserman, P (2015) A review of research on the effects of early childhood Education and Care (ECEC) upon child development. CARE project; Curriculum Quality Analysis and Impact Review of European Early Childhood Education and Care (ECEC). Utrecht: CARE
http://ecec-care.org/resources/publications/#c30167

Pingault, J.-B., Tremblay, R. E., Vitaro, F., Japel, C., Boivin, M., & Côté, S. M. (2015). Early Nonparental Care and Social Behavior in Elementary School: Support for a Social Group Adaptation Hypothesis. Child Development, in press.

Early Start, University of Wollongong, Response to Issues Paper - Productivity Commission Inquiry into National Education Evidence Base

Page **7** of **8**

Ramey, C. T., & Campbell, F. A. (1991). Poverty, early childhood education, and academic competence: The Abecedarian experiment. In A. C. Huston (Ed.), Children in poverty: Child development and public policy (pp. 190-221). Cambridge: Cambridge University Press.

Ramey, C. T., Campbell, F. A., Burchinal, M., Skinner, M. L., Gardner, D. M., & Ramey, S. L. (2000). Persistent effects of early childhood education on high-risk children and their mothers. Applied Developmental Science, 4(1), 2-14.

Robb M and Lauricella A (2014). Connecting Child Development and Technology: What We Know and What It Means. In C. Donohue (Ed.), Technology and Digital Media in Early Years: Tools for Teaching and Learning (pp.70-85). Florence, KY, USA: Taylor and Francis.

Rural and Remote Education Advisory Council. (2010). Future Uses of Technology in Ruarl and Remote School Report. Retrieved from http://rreac.des.wa.gov.au/SiteCollectionDocuments/Future%20uses%20of%20technology%20in%20rural%20and%20remote%20schools.pdf

Sammons, P., Sylva, K., Melhuish, E. C., Siraj-Blatchford, I., Taggart, B., & Hunt, S. (2008). Influences on children's attainment and progress in key stage 2: Cognitive outcomes in year 6. London: Department for Children, Schools and Families.

Sammons, P., Sylva, K., Melhuish, E., Siraj-Blatchford, I., Taggart, B., Toth, K., . . . Smees, R. (2011). Effective Pre-school, Primary and Secondary Education Project (EPPSE 3-14): Influences on students' attainment and progress in Key Stage 3: Academic outcomes in English, maths and science in Year 9 Full report. London: Department for Education.

Sammons, P., Sylva, K., Melhuish, E., Siraj, I., Taggart, B., Toth, K., & Smees, R. (2014). The Effective Pre-school, Primary and Secondary Education Project (EPPSE 3-16+). Influences on students' GCSE attainment and progress at age 16. London: Department for Education.

Sammons, P., Sylva, K., Melhuish, E., Siraj, I., Taggart, B., Smees, R., & Toth, K. (2014a). The Effective Pre-school, Primary and Secondary Education Project (EPPSE 3-16+) Influences on students' dispositions and well-being in Key Stage 4 at age 16. London: Institute of Education, University of London/ Department for Education.

Sammons, P., Sylva, K., Melhuish, E., Siraj, I., Taggart, B., Smees, R., & Toth, K. (2014b). The Effective Pre-school, Primary and Secondary Education Project (EPPSE 3-16+) Influences on students' social-behavioural development at age 16. London: Department for Education.

Sammons, P., Sylva, K., Melhuish, E., Siraj, I., Taggart, B., Smees, R., & Toth, K. (2014c). The Effective Pre-school, Primary and Secondary Education Project (EPPSE 3-16+) Students' views of school in Key Stage 4 at age 16. London: Institute of Education, University of London/ Department for Education.

Sylva, K., Stein, A., Leach, P., Barnes, J., & Malmberg, L. E. (2011). Effects of early child-care on cognition, language, and task   -related behavio
British Journal of Developmental Psychology, 29(1), 18-45.

Trinidad S and Broadley T (2010). Connecting and collaborating in regional, rural and remote Western Australia. Australian Educational Computing, 25 (2), 22-26. Available from http://acce.edu.au/sites/acce.edu.au/files/pj/journal/AEC%20V25N2Connecting%20and%20Collaborating.pdf

Early Start, University of Wollongong, Response to Issues Paper - Productivity Commission Inquiry into National Education Evidence Base

Page **8** of 8